The present invention relates generally to brackets for supporting articles of various types and, more particularly, to a support bracket arranged for removable mounting on an apertured board. Additionally, the invention relates to a method of fabrication of such support bracket.

Apertured boards with associated hooks or alternative forms of article support brackets have come into extensive use in recent years, particularly in retail establishments for the display of numerous small articles. The permitted variation in position of the other bracket on the board so that various sized articles can be supported constitutes the principal disadvantage of this arrangement. However, certain problems have been encountered with existing structures. For example, existing hooks can be attached to the board only by initial insertion at an angle which in turn requires a predetermined excess spacing between adjacent articles so that ultimately the usable space on the mounting board is not maximized. Furthermore, the relatively recent substitution of metallic boards for the previous boards composed of compressed fiber or other materials permitting limited distortion has occasioned some difficulty in attachment of mounting of the hook or other bracket on the board itself.

Accordingly, it is an object of the present invention to provide an article support bracket that can be easily attached to an apertured board of fiber or metallic construction, yet when so mounted assures a firm, strong support for the articles. It is a feature of the invention to provide a support bracket that can be attached to panels detached from an apertured board by motion rectangularly related to the face of the board to obviate the necessity for angular disposition of the bracket during initial insertion or withdrawal whereby optimum utilization of the existing space on the board is achieved.

Another feature of the invention relates to the provision of an article support bracket including integral guide elements to facilitate insertion or withdrawal of the bracket from the mounting board.

An additional feature of the invention is the provision of an article support bracket that can include a plurality of board engaging hooks physically spaced to enable simultaneous entry into a plurality of the holes or apertures in the board, wherefore a multiple contact support is provided.

Yet another significant feature of the invention is the provision of a novel method for fabrication of the article support bracket which readily adapts itself to alternative forms of the bracket providing either single or multiple supporting contact with the board. These as well as additional objects and features of the invention will become more apparent from a perusal of the following description of the structures illustrated in the accompanying drawings wherein:

FIG. 1 is a perspective view of an apertured board having brackets constituting two distinct embodiments of the present invention mounted thereon.

FIG. 2 is an enlarged fragmentary sectional view taken substantially along line 2—2 of FIG. 1 to illustrate more clearly the details of this arrangement.

FIG. 3 is a sectional view generally similar to FIG. 2 but illustrating the manner of removal or insertion of the article support bracket relative to the board itself.

FIG. 4 is a plan view illustrating the successive steps of the method for fabrication of a bracket embodying the present invention, and

FIGS. 5A through 5D are a series of transverse sectional views taken along the corresponding section lines in FIG. 4 to facilitate an understanding of the method steps.

With initial reference to FIG. 1 an apertured board 10 of more or less conventional type is illustrated. The board 10 can be formed from fiber board in which case its thickness would be approximately one quarter of an inch or, alternatively, can be formed from sheet metal in which case a thickness of 0.050 inch provides adequate strength. Regardless of the composition of the board 10, it is provided with a plurality of apertures 12 arranged in vertically and horizontally aligned rows. Preferably, the apertures 12 are approximately one quarter inch in diameter and are spaced one inch apart in each the horizontal and vertical directions.

An article support bracket embodying the present invention includes a base member 20 that is adapted to engage the front surface of the board 10 and has attached thereto one or more hook members 22 that are adapted to project rearwardly from the base member 20 through the apertures 12 in the board 10 and establish a firm engagement with the rear surface of the board. An article carrier is also secured to the base member 20 but projects forwardly therefrom to enable support of articles thereon. As shown in FIG. 1, such article carrier may take the form of a simple projecting rod 26 or a shelf 28 and, dependent upon the specific requirements can take many alternative forms which need not be described since they, in and of themselves, form no part of the present invention.

With additional reference to FIGS. 2 and 3, the base member 20 preferably takes the form of a small flat metallic plate having a thickness of approximately 0.030 inch and a height and width each slightly less than one inch. Thus, the base member 20 is adapted to flatly engage the front surface of the board 10 over an area entirely between vertically and horizontally adjacent apertures 12 in the board, as clearly illustrated in the upper portion of FIG. 1.

Two hook members 22 are integrally formed with the base plate 20 at its upper and lower edges, both hook members being bent in the same direction so that their free extremities lie below the respective upper and lower edges of the base plate. The dimensions of each of the hook members 22 projected onto the plane defined by the base plate 20 are less than the size of the aperture 12 in the board so that each of the hook members can be easily inserted or withdrawn therefrom, and the spacing between the hook members 22 is equivalent to the aperture spacing so that both hook members can simultaneously pass through vertically adjacent apertures by moving perpendicularly to the plane of the board 10 to the left as viewed in FIG. 3. Each of the hook members 22 is bent into a generally arcuate configuration greater than 180° from the plane of the base member 20 and, preferably as shown, constitutes a bend of approximately 270° so that the free edge 22a of the hook member is parallel to the plane defined by the base plate itself. The spacing between this free edge 22a of each hook member 22 and the rear face of the base plate 20 that is adapted to engage the front surface of the board 10 is equal to or slightly greater than the thickness of the board wherefore this free edge of the hook member is in turn adapted to flatly engage the rear surface of the board and accordingly provide the required mounting capability.

From the disinterested position shown in FIG. 3, the base plate 20 with the attached hook members 22 is moved in a direction substantially perpendicular to the plane defined by the board 10 so that the hook members 22 pass through vertically adjacent apertures 12 in the board and the base plate 20 comes into flat engagement with the
front surface of the board. After such engagement has been made, the unit is moved downwardly in a direction parallel to the plane of the board 10 so as to bring the free edges 22a of the hook members 22 into engagement with the rear surface of the board below such apertures 12 or, in other words, into the mounted disposition illustrated most clearly in FIG. 2. It is to be expressly observed that the arcuate bending of the hook members 22 provides a curved surface at the leading edge of the hook members during their insertion into the apertures and these curved surfaces accordingly serve as guide elements which facilitate appropriate alignment of the hook members with the apertures to facilitate such insertion. Additionally, after the mounted disposition illustrated in FIG. 2 has been obtained, the engagement established with the rear surface of the board is spaced downwardly a certain distance from the point of attachment of the hook members 22 to the base plate 20 and, consequently, a significant distance below the apertures 12 so that accidental disconnection of the unit is precluded.

As previously mentioned, the carrier for the articles can take various forms. As shown in the upper portion of FIG. 1 and FIGS. 2 and 3, the carrier is in the form of a simple rod 26 that is spot welded or otherwise secured to the base plate 20 to project substantially perpendicularly therefrom. The length of this rod 26 is limited only by strength requirements since, as previously mentioned, the entire unit is moved directly towards the board 10 during mounting or, in other words, in a direction perpendicular to the plane defined by the board. Thus, even if the rod 26 is relatively long, no angular disposition is necessitated during the mounting or disconnection of the bracket and interference with adjoining articles or brackets is eliminated.

As shown in the lower portion of FIG. 1, the carrier can take the form of a flat shelf 28 and, in this event, the base plate 20 can, for strength requirements, be elongated in a horizontal direction and have attached thereto a plurality of the hook members 22, as hereinabove described, so that multiple contact support with the rear surface of the board 10 can be established.

In accordance with an additional aspect of the present invention, the method of fabrication of the article supported in brackets in either of the described alternative forms has been simply devised. Generally, such method includes the fabrication of the base plate 20 and integral hook members 22 from an elongated strip S of metallic material by a series of steps as best illustrated in FIG. 4 and FIGS. 5A through 5D. Briefly, such method includes the initial step of cutting rectangular openings simultaneously on opposite sides of the strip directly opposite positions whereby tabs T indicated in FIG. 5A are formed at spacings which correspond to the aperture spacing of the board to which the unit is ultimately to be attached. As a second step, the extremity of each of these tabs T is slightly curved or bent, the end of one tab being bent to the left and the other to the right, as clearly illustrated in 5B. Both tabs T are then bent to the left to a disposition substantially at right angles to the plane of the strip S as shown in FIG. 5C and as shown in FIG. 5D, both rectangularly bent tabs T with the curved edges are subjected to the action of a concave punch that completes the arcuate curvature of both tabs T onto the final configuration of the hook members 22. In the final step, the strip S is severed to form a small base plate 20 with upper and lower hook members 22 or, alternatively, the strip S may be severed at a greater interval so that an elongated base plate with a plurality of hook members of the type illustrated in the lower portion of FIG. 1 may be obtained. Only the variation in this final step is required to enable fabrication of either embodiment of the invention.

Various other alterations and/or modifications in the described structure or in the method of fabricating the same can obviously be made without departing from the spirit of the invention. As one example, the base plate 20 can be formed with but the upper hook member 22 and still provide an effective bracket, this being possible since the edge 22a engages the rear of the board 10 so as to pass through vertically-adjacent apertures in said base plate to thus hold the base plate 10 against either upward or downward pivotal motion. Accordingly, the foregoing description of two preferred embodiments of the invention and the method of fabricating the same is to be considered in an exemplary sense only and the actual scope of the invention is to be indicated by reference to the appended claims.

What is claimed is:

1. In combination with a board having a plurality of like apertures therein at regularly spaced vertical and horizontal intervals when the board lies in a vertical plane, an article support bracket removably mounted on said board including a vertically-disposed base member dimensioned to engage said board between vertically-adjacent apertures therein, hook members secured to said vertically-disposed base member at the upper and lower extremes thereof and bent in the same direction downwardly therefrom, the position and dimensions of said hook members being such that they can simultaneously pass through vertically-adjacent apertures in said board when the surface of said board and the board-engaging surface of said base member are parallel, said hook members extending through said vertically-adjacent apertures with the free end of each of said hook members extending toward said base member and spaced from said base member a distance not less than the thickness of said board.

2. In the combination of claim 1, additional hook members on said base member at laterally-displaced positions for extension through horizontally-spaced apertures in said aperture board.

3. In combination with a board having a plurality of like apertures therein at regularly spaced vertical and horizontal intervals when the board lies in a vertical plane, an article support bracket removably mounted on said board including a vertically-disposed base member dimensioned to engage said board between vertically-adjacent apertures therein, mounting members secured to said vertically-disposed base member at the upper and lower extremes thereof and projecting laterally therefrom, the position and dimension of said mounting members being such that they can simultaneously pass through vertically-adjacent apertures in said board when the surface of said board and the board-engaging surface of said base member are parallel, said mounting members extending through said vertically-adjacent apertures, the upper mounting member being bent downwardly so that the free end thereof extends toward said base member and is spaced from said base member a distance not less than the thickness of said board.

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